

Algorithms in Policing – Take ALGO-CARE™

A proposed decision-making framework for the deployment of algorithmic assessment tools in the policing context

A	Advisory	Is the assessment made by the algorithm used in an advisory capacity? Does a human officer retain decision-making discretion? What other decision-making by human officers will add objectivity to the decisions (partly) based on the algorithm?
L	Lawful	On a case-by-case basis, what is the policing purpose justifying the use of algorithm, both its means and ends? Is the potential interference with the privacy of individuals necessary and proportionate for legitimate policing purposes? In what way will the tool improve the current system and is this demonstrable? Are the data processed by the algorithm lawfully obtained, processed and retained, according to a genuine necessity with a rational connection to a policing aim? Is the operation of the tool compliant with national guidance?
G	Granularity	Does the algorithm make suggestions at the right level of detail/granularity, given the purpose of the algorithm and the nature of the data processed? Do the benefits outweigh any technological or data quality uncertainties or gaps? Is the provenance and quality of the data sufficiently sound? Consider how often the data should be refreshed. If the tool takes a precautionary approach towards false negatives, consider the justifications for this.
O	Ownership	Who owns the algorithm and the data analysed? Does the force need rights to access, use and amend the source code and data analysed? How will the tool be maintained and updated? Are there any contractual or other restrictions which might limit accountability or evaluation? How is the operation of the algorithm kept secure?
C	Challengeable	What are the post-implementation oversight and audit mechanisms e.g. to identify any bias? Where an algorithmic tool informs criminal justice disposals, how are individuals notified of its use (as appropriate in the context of the tool's operation and purpose)?
A	Accuracy	Does the specification match the policing aim and decision policy? Can the stated accuracy of the algorithm be validated reasonably periodically? Can the percentage of false positives/negatives be justified? How was this method chosen as opposed to other available methods? What are the consequences of inaccurate forecasts? Does this represent an acceptable risk (in terms of both likelihood and impact)? Is the algorithmic tool deployed by those with appropriate expertise?
R	Responsible	Would the operation of the algorithm be considered fair? Is the use of the algorithm transparent (taking account of the context of its use), accountable and placed under review alongside other IT developments in policing? Would it be considered to be for the public interest and ethical?
E	Explainable	Is appropriate information available about the decision-making rule(s) and the impact that each factor has on the final score or outcome (in a similar way to a gravity matrix)? Is the force able to access and deploy a data science expert to explain and justify the algorithmic tool (in a similar way to an expert forensic pathologist)?

Brief explanatory notes and additional considerations

The *Algorithms in Policing – Take ALGO-CARE™* framework is intended to provide guidance for the use of risk-assessment, predictive, forecasting, classification, decision-making and assistive policing tools which incorporate algorithmic machine learning methods and which may impact individuals on a micro or macro level

A Advisory

Care should be taken to ensure that an algorithm is not inappropriately fettering an officer's discretion, as natural justice and procedural fairness claims may well arise. Consider if supposedly advisory algorithmic assessments are in practice having undue influence. If it is proposed that an algorithmic decision be automated and determinative, is this justified by the factors below? Data protection rights in regard to automated decisions may then apply.

L Lawful

The algorithm's proposed functions, application, individual effect and use of datasets (police-held data and third party data) should be considered against necessity, proportionality and data minimisation principles, in order to inform a 'go/no-go' decision. In relation to tools that may inform criminal justice disposals, regard should be given to the duty to give reasons.

G Granularity

Consideration should be given to common problems in data analysis, such as those relating to the meaning of data, compatibility of data from disparate sources, missing data and inferencing. Do forces know how much averaging or blurring has already been applied to inputs (e.g. postcode area averages)?

O Ownership

Consider intellectual property ownership, maintenance of the tool and whether open source algorithms should be the default. When drafting procurement contracts with third party software suppliers (commercial or academic), require disclosure of the algorithmic workings in a way that would facilitate investigation by a third party in an adversarial context if necessary. Ensure the force has appropriate rights to use, amend and disclose the tool and any third party data. Require the supplier to provide an 'expert' witness/evidence of the tool's operation if required by the force.

C Challengeable

The results of the analysis should be applied in the context of appropriate professional codes and regulations. Consider whether the application of the algorithm requires information to be given to the individual and/or legal advisor. Regular validation and recalibration of the system should be based on publicly observable (unless non-disclosable for policing/national security reasons) scoring rules.

A Accuracy

How are results checked for accuracy, and how is historic accuracy fed back into the algorithm for the future? Can forces understand how inaccurate or out-of-date input data affects the result?

R Responsible

It is recommended that ethical considerations, such as consideration of the public good and moral principles (so spanning wider concerns than legal compliance) are factored into the deployment decision-making process. Administrative arrangements such as an ethical review committee incorporating independent members could be established for such a purpose (such as [Cleveland & Durham Joint External Ethics Committee](#) or [NSDEC](#)).

E Explainable

The latest methods of interpretable and accountable machine learning systems should be considered and incorporated into the specification as appropriate. This is particularly important if considering deployment of 'black box' algorithms, where inputs and outputs are viewable but internal workings are opaque (the rule emerges from the data analysis undertaken). Has the relevant Policing & Crime Commissioner been briefed appropriately?